

will make a more remarkable appearance after it has passed the sun, than it does at present. I know not whether this comet has been observed by any person about London; if I thought it had, I would not have given your lordship the trouble of this; but I wished to put other people upon the look-out, who will probably make more of it than I can. [For the appearance of this comet, see Plate IV.] I have the honour to be,

My Lord,

Your Lordship's

most obedient and most humble servant,

Alex. Brice.

XI. *A Report concerning the Microscope-Glasses, sent as a Present to the Royal Society*, by Father di Torre of Naples, and referred to the Examination of Mr. Baker, F. R. S.*

Read April 17, 1766. **M**R. Baker now returns the microscope glasses, which the Royal Society did him the honour to refer to his examination: and he would have returned them much sooner, had he not waited till he could examine them by bright day-light, being desirous to do them all the justice in his power.

* Vid. Phil. Tranf. Vol. LV. p. 253.

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They are globules of glaſs, formed over a lamp, by Father di Torre, and ingeniouſly placed in cells of braſs, adapted to Wilſon's microſcope. Four of theſe cells, thus furniſhed, were ſent as a preſent from the Father to this Society, under the care of our late worthy member Sir Francis Eyles Stiles: but when they came into Mr. Baker's hands, one of theſe minute glaſſes was wanting, having probably been ſhaken out of its cell in carriage: the loſs, however, ſignifies little, as there remains another of the ſame magnifying power.

Theſe globules are wonderfully ſmall: the largeſt being in diameter only two Paris points, and ſaid to magnify the diameter of an object 640 times: the ſecond is the ſize of one Paris point, magnifying the diameter of an object 1280 times; and the third is ſo extremely minute, as to be no more than one half of a Paris point, or the 144th part of an inch in diameter, and is ſaid to magnify the diameter of an object 2560 times, and conſequently it muſt magnify the ſquare of ſuch diameter 6,553,600 times.

Now as the focus of a glaſs globule is at the diſtance of $\frac{1}{4}$ th of its diameter, it is with the utmoſt difficulty that globules ſo minute as theſe can be employed to any purpoſe. For inſtance, the focus of that globule, whoſe diameter is but one half of a Paris point (or the 144th part of an inch) is no farther from the object to be examined, than the 576th part of an inch. In attempting to find this focus, it is ſcarce poſſible to avoid touching the object with the glaſs, if it be not placed between laminæ of talc or iſinglaſs; and if it be ſo placed, even the thinnest talc bears a conſiderable proportion to this 576th part of an
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an inch, and will prove an unfurmountable obstacle to the seeing any object, unless by some very happy accident.

The other globules, whose focus is not quite so near, are liable proportionally to the same inconvenience.

The very great magnifying power of glass globules is sufficiently well known: many years ago they were much used, and highly boasted of on that account. But they now, long since, have been laid aside, and convex lenses substituted in their room; and that with very good reason, from the difficulty in the application of such globules, from the deficiency of light, from the distortion of the image seen, from the painful straining of the eyes, and from the boundless latitude given to imagination and conjecture, for want of sufficient distinctness and precision.

Nothing can be more injudicious than the desire of such excessive magnifying power: whenever we can see an object clearly and well defined, we ought to be contented; all beyond this there is no dependence on.

In some letters, sent with these glasses, the Society has been favoured with uncommon observations on the globules of the blood, described as having been viewed (it is not said by these glasses) floating in the serum, and sometimes changing their figure therein: and also with a long account of the impregnation of vegetables; wherein we are told, that the exquisitely minute corpuscles or seminal particles, emitted by the grains of the Farina foecundans, have been seen to enter into, and be conveyed along tubes exceeding small, which at the time dilated and contract-
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ed occasionally to convey them to the ovarium *. Mr. Baker was extremely desirous to repeat these experiments: but as it was absolutely necessary to spread the blood as thin as possible, to render it very transparent, without which nothing can be seen by such small glasses, he could not possibly prevent its becoming quite dry, before he could apply it to the eye, and consequently was unable to perceive any floating globules: and though he has been many years conversant with microscopes, he has not been able to contrive any method of applying the parts of generation of plants in such manner, to these glasses, as to view this wonderful impregnation.

* The curious will find the whole account, with copper-plates relating thereto, Phil. Trans. Vol. LV. p. 258—270; from whence one single passage shall be here quoted, viz. p. 262. “ The grains being arrived at a state of maturity before they issued from the antheræ, are prepared to burst and discharge their contents when they fall on the hairs: and the female organ assists likewise in producing this effect; for soon after a grain has lodged itself, the point of the hair begins to open, and the mouth extends itself by degrees over the surface of the grain, till almost the whole body of the grain is drawn within the tube; in this situation the grain soon yields to the compression of the tube, and discharges its corpuscles, which, with the assistance of the fluid parts of the pulp that enter with them, or of the juices with which the tube itself is furnished, float on till they enter the longitudinal ducts, which convey them to the germen.”—It must be observed here, in justice to Mr. Turberville Needham, F. R. S. that he was the person who first discovered, that, on applying water to the *Farina sæcundans*, many of its grains emitted streams of exquisitely minute globules, as if through a small aperture: this he published in the year 1745 †, and from thence imagined the impregnation of plants to be carried on in a manner somewhat similar to that in the account referred to; but the same justice must allow, that, before Father di Torre, nobody is supposed to have seen these several progressions towards impregnation.

† Vid. Microscopical Discoveries by Mr. Needham, p. 73, &c.

It is, however, proper to take notice, that in these letters an apparatus is described, to be added to Wilson's microscope, when these glasses are made use of; which apparatus Mr. Baker was not at the expence of procuring, as it would answer no other purpose: but the method he contrived, instead thereof, he imagines to be equally effectual.

In truth, Mr. Baker has employed much time and his best endeavours in the examination of these glasses, as they were supposed capable of such wonderful discoveries: and that as well by candle-light, as (by what is recommended) the strongest day-light: and yet he must declare, with some concern, that through the smallest globule, viz. of one half of a Paris point in diameter, he has not been able to distinguish any thing; and even through that which magnifies the least, he could never view any object with satisfaction; though he applied the most minute, and consequently the properest objects for these glasses, viz. the globules of the blood, the farina of vegetables, the seeds of mushrooms, the feathers of butterflies, pepper-water, &c. He hopes his eyes are not injured by these examinations, as they have been much used to microscopes; but he believes there are very few, who would not have been nearly blinded thereby.

Upon the whole,—Mr. Baker thinks the Royal Society much obliged to the Father di Torre for these specimens of his great dexterity, ingenuity, and patience, in forming and setting glass spheres thus extremely minute; but he considers them as matters of curiosity rather than of real use.

Strand, April 17,
1766.

Henry Baker.

Received